CONFIDENTIAL

18 November 1952

MEMORANDUM FOR RECORD
TO : A. C. TSS/ASD
SUBJECT : Microphone Studies
Acoustic Artillery by Nikolai Iakovlevick Golorin
Library of Congress - call No. UF 848 G6

1. A review of chapter five of the referenced Russian text revealed that it was divided into the following sections:

Section 1 General Information about Microphones
Section 2 Contact Microphones (i.e. Carbon Type)
Section 3 Condenser Microphones
Section 4 Electromagnetic Microphones
Section 5 Electrodynamic Microphones
Section 6 Capillary Microphones
Section 7 Magnetostriction
Section 8 Piezo Microphones
Section 9 Thermonic Microphones
Section 10 Gas Microphones
Section 11 Hot Wire Microphones
Section 12 Photo Microphones

The discussions set forth in each case represented well-known and overt information on each of the subjects with the possible exception of that pertaining to capillary microphones.

2. The capillary microphone is reported to consist of a vessel containing mercury into which a funnel with a capillary throat is inserted so that its throat is below the upper level of the mercury. When the funnel is initially fixed in the vessel of mercury, the level of the mercury in the capillary is lower than that in the outer sections of the container. This is possible because the capillary prevents the mercury in the funnel from rapidly rising and assuming the same level as the external liquid. A lead wire is positioned in the outer mercury bath. An electrolyte is then poured over the mercury in the funnel

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and a second lead wire is inserted into the electrolyte. Acoustical waves incident on the surface of the electrolyte cause the liquid interface between the electrolyte and the mercury to move, thus producing and changing the ratio of the internal to external resistances of the mercury in and out of the funnel capillary. Accordingly, if an electrical circuit including an amplifier is coupled to the above mentioned leads, the acoustical variations producing the movement of the liquid interface can be reproduced.

3. The effectiveness of this microphone was not discussed, but possible operational applications may at sometime lend themselves to its use or modifications of it.

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